REEL # 121

ELTETO, Zoltan -

to

ELTETO, Zoltan

Mechanization of loading by the Hungarian State Railways.
Vasut 8 no.2:3-4 15 Mr '58.

ELTETO, Zoltan

Loading mechanization by the Hungarian State Railways. Kozleked kozl
19 no.45: 751-753 10 N '63.

SHEVTSOVA, Z.N.; ZHIZHINA, L.I.; EL'TSBERG, L.Ye.

Solubility isotherms of the systems: $LaCl_3$ - KCl - H_2O, $NdCl_3$ - KCl - H_2O, $LaCl_3$-NH_4Cl - H_2O, and $NdCl_3$- NH_4Cl - H_2O at 25°. Izv. vys. ucheb. zav.; khim. i khim. tekh. 4 no.2:176-178 '61. (MIRA 14:5)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova.
(Systems (Chemistry)) (Solubility)

BERLIN, A.A.; EL'TSEFON, B.S.

Investigation in the mechanochemistry of polymers. Part 6: Investigating the distintegration of polystyrene in solutions under the action of ultrasonic waves. Vysokom.soed. 1 no.5:688-697 My '59. (MIRA 12:10)

1. Laboratoriyi polimernykh materialov Moskovskogo tekhnicheskogo instituta myaso-molochnoy promyshlennosti.
(Styrene) (Ultrasonic waves)

S/189/62/000/001/002/002
D227/D302

AUTHORS: Popovich, M.P., Samoylovich, V.G. and El'tsefon, B.S.

TITLE: A study of the silent discharge in oxygen

PERIODICAL: Moscow,Universitet. Vestnik, Seria II. Khimiya, no. 1, 1962, 80

TEXT: The emission spectrum of a silent discharge in oxygen at atmospheric pressure was observed in the visible region. The usual silent discharge apparatus was used with the exception of the ozonizer which consisted of a glass cylinder with windows of optical quartz, a cooling system and flat, glass electrodes separated by 1 mm. Frequency of the applied potential was 50 c/s, the voltage 10 Kv and the current μa. The spectrum was recorded with the aid of an ИСП -28 (ISP-28) instrument, on "Ramman Platten" plates, with an exposure of 45 hrs. and an 0.008 mm slit. Spark spectra of iron were photographed on the same plate for the sake of comparison. The silent discharge spectrum thus obtained extended from 4707 to 2952 A.U. Three ozone bands at 4277, 3099, 3090 AU were found, as well as 33 bands belonging to the second

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30890
S/190/62/004/007/003/009
B145/B180

11, 2210

AUTHORS: El'tsefon, B. S., Berlin, A. A.

TITLE: Investigation into the mechanochemistry of polymers. XIII. Effect of the volume of irradiated samples on the kinetics of ultrasonic destruction of polystyrene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 7, 1962, 1033-1041

TEXT: No papers have hitherto been published on this problem of ultrasonic destruction. Apparatus and procedure have already been described (A. A. Berlin, B. S. El'tsefon, Vysokomolek. soyed., 1, 688, 1959; A. K. Burov, Akust. zh., 4, 315, 1958). The authors used a УАГ-100 (UAG-100) oscillator with frequency of 1.5 Mc/sec, intensity 50 kw/cm^2 and energy density of 4.5-45 kw/g, with solutions of 0.1 g polystyrene (polymerization coefficient: 8120) in 100 ml benzene. The volume v was 10-100 cm^3, the height of the column of liquid was 11-110 cm. For the initial period of destruction, the rate constant k was independent

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Investigation into the...

of the chain length at all v values. k is proportional to the acoustic energy density U/v·c (where U is the acoustic power added, and c is the concentration of the solution) and to the reciprocal values of v and the height of the column of liquid. The relation

$$P = P_o e^{-kt}$$

is valid where P = mean viscosimetric polymerization coefficient. The relation $1/P - 1/P_o = k_1 t$ holds for v = 10, 15, 20, 30 cm^3 within the density range of $1.5 \cdot 10^3$ w/g at 30 cm^3 to $4.5 \cdot 10^3$ w/g at 10 cm^3 and also for the polymerization coefficients from 2.5 to $\sim 4.5 \cdot 10^3$. k_1 showed no linear dependence on U/v·c, but increased with energy density. Extrapolation for 0 yielded the lowest density at which k_1 starts being linearly dependent on P. For v = 40, 60, and 100 cm^3 the following dependence of the rate constant on P was found,

$$P = P_o / \sqrt{1 + 2\beta(P_o)^2 k_2 t}.$$

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Investigation into the...

In the coordinates $(P_o/P)^2 - 1$, t, curves with two linear sections were obtained for all three volumes. The results confirm the importance of the q-factor ($q = Ut/vc$), which was introduced in a previous paper, for the investigation of the ultrasonic destruction of polymers. There are 6 figures and 2 tables. The English-language reference is:
I. Sakurada, Chem. High Polymers. Japan, 2, 253, 1945.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR)

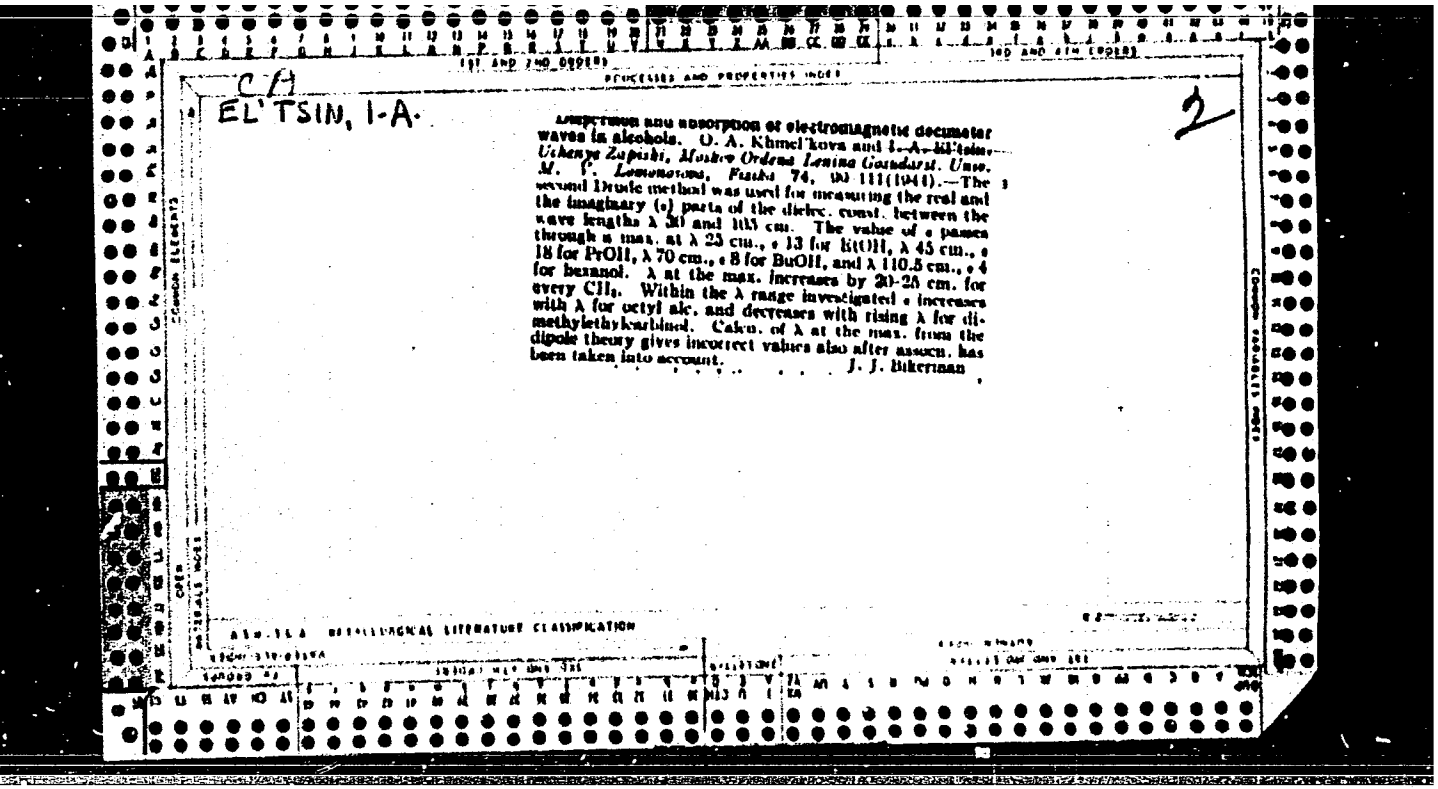
SUBMITTED: April 20, 1961

Card 3/3

EL'TSEFON, B.S.; BERLIN, A.A.

Mechanochemistry of polymers. Part 14: Role of the concentration of acoustic energy in the ultrasonic degradation of polymers in a solution. Vysokom. soed. 5 no.10:1562-1567 O '63. (MIRA 17:1)

1. Institut khimicheskoy fiziki AN SSSR.



CA

EL'TSIN, I-A.

2

Dispersion and absorption of electromagnetic decimeter waves in alcohols. O. A. Khmel'kova and I. A. El'tsin. *Uchenye Zapiski, Moskov Ordena Lenina Gosudarst. Univ. M. V. Lomonosova, Fizika* 74, No 111(1944).—The second Drude method was used for measuring the real and the imaginary (ε) parts of the dielec. const. between the wave lengths λ 30 and 100 cm. The value of ε passes through a max. at λ 25 cm., ε 13 for MeOH, λ 45 cm., ε 18 for PrOH, λ 70 cm., ε 8 for BuOH, and λ 110.5 cm., ε 4 for hexanol. λ at the max. increases by 20-25 cm. for every CH_2. Within the λ range investigated ε increases with λ for octyl alc. and decreases with rising λ for dimethylethylcarbinol. Calcn. of λ at the max. from the dipole theory gives incorrect values also after assocn. has been taken into account.

J. J. Bikerman

EL'TSIN, I. A.

USSR/Physics Apr 47
Dielectrics - Constants
Electrolytes - Conductivity

"The Work of O. K. Davtyan on the Dielectric Permeability and Conductivity of Electrolytes," E. M. Fradkina, M. P. Shirokov, I. A. L'tsin, 1½ pp

"Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki" Vol XVII, No 4

Authors maintain that there a number of serious errors in two articles published in the "Journal of Physics" and "Izvestiya Akademii Nauk" by Datyan on "Dielectrical Properties and Electrostriction of Solutions and Electrolytes," and "The Complexity of Electrical Conductivity of Electrolytes in an Alternating Electric Field." Eight quotations are presented to show the errors in Davtyan's work.

PA 34T76

Sci Res. Inst. Physics, Moscow State U.

EL'TSIN, I. A.

USSR/Electricity May 1948
Dielectrics, Solid
Dielectrics - Losses

"Plate Method for the Determination of Dielectric Permittivity and the Tangent of the Angle of Loss," I. A. El'tsin, Sci Res Inst of Phys, Moscow State U, 8 pp

"Zhur Tekh Fiziki" Vol XVIII, No 5

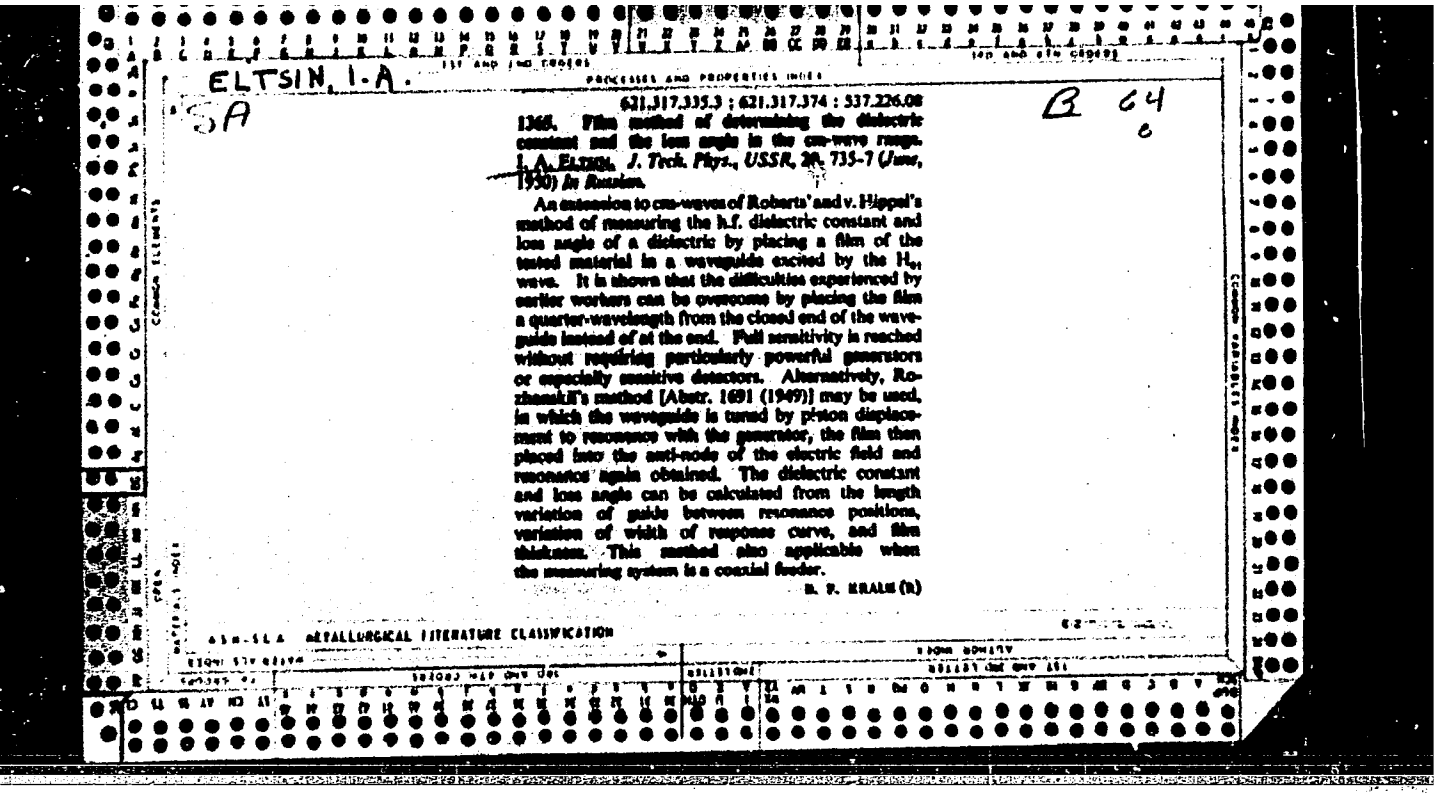
Paper gives strict theory of method for a thin plate situated in middle of a Lecher system. Formulas obtained are applied to calculation of dielectric permittivity and tangent of angle of loss (on a wave

75T31

USSR/Electricity (Contd) May 1948

λ = 336 cm) of various solid dielectrics. Submitted to Zh. E.T.F. 27 Nov 1947. Submitted 26 Dec 1947.

75T31



ELTSIN, I-A.

SA

B 64

621.317.335.3 : 621.317.374 : 537.226.08

1365. **Film method of determining the dielectric constant and the loss angle in the cm-wave range.** I. A. ELTSIN. *J. Tech. Phys., USSR*, 20, 735-7 (June, 1950) *In Russian.*

An extension to cm-waves of Roberts' and v. Hippel's method of measuring the h.f. dielectric constant and loss angle of a dielectric by placing a film of the tested material in a waveguide excited by the H_{01} wave. It is shown that the difficulties experienced by earlier workers can be overcome by placing the film a quarter-wavelength from the closed end of the waveguide instead of at the end. Full sensitivity is reached without requiring particularly powerful generators or especially sensitive detectors. Alternatively, Rozhanskii's method [Abstr. 1691 (1949)] may be used, in which the waveguide is tuned by piston displacement to resonance with the generator, the film then placed into the anti-node of the electric field and resonance again obtained. The dielectric constant and loss angle can be calculated from the length variation of guide between resonance positions, variation of width of response curve, and film thickness. This method also applicable when the measuring system is a coaxial feeder.

B. P. KRAUS (h)

EL'TSIN, I. A.

USSR/Physics - Dielectric Measurements Sep 52

"The Theory of Drude's Method for Measuring Dielectric Permeability and Electric Absorption in Small Quantities of Matter," I. A. El'tsin, Chair of General Physics

Vest Mos Univ, Ser Fizikomat i Yest Nauk, No 6, pp 25-31

A critical survey of works devoted to the analysis of Drude's second method. Develops a strict theory of the method and indicates measures to be taken for obtaining great accuracy. Cites the related

275T100

work of I. V. Zhilenkov and A. N. Yefremov, "Influence of Reactive Resistances in the Quarter Wave Lecher system upon the Measurement of Dielectric Permeability (ZhETF, 21, 830, 1951). States that his method is more convenient than the Drude-Coolidge method especially in measurements at different temps because of improved thermostatic control.

1. YEL'TSIN, I. A.

2. USSR (600)

4. Electric Capacity

7. Theory of Drude's method for the measurement of the dielectric constant and of electric absorption in small amounts of a substance (Drude's second method). Vest. Mosk. un. 7 no. 9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

El'tsin, I.A.

EL'TSIN, I.A.

The plate method for measuring the dielectric permeability and loss angle of dielectrics in the metric, decimetric, and centimetric wave bands. Report No. 2. Vest.Mosk.un.Ser.mat.,mekh., astron., fiz.,khim. 12 no.2:65-73 '57. (MIRA 10:12)

1.Kafedra teorii kolebaniy Moskovskogo universiteta.
(Dielectrics)

EL'TSIN, I. A.

El'tsin, I.A. "Plate" Method for Measuring the Dielectric Constant and Loss Angle of Dielectrics in the Meter, Decimeter and Centimeter Bands

(The Physics of Dielectrics; Transactions of the All-Union Conference on the Physics of Dielectrics) Moscow, Izd-vo AN SSSR, 1958. 245 p. [illegible] copies printed.

This volume publishes reports presented at the All-Union Conference on the Physics of Dielectrics, held in Dnepropetrovsk in August 1956 sponsored by the "Physics of Dielectrics" Laboratory of the Fizicheskiy Institut imeni Lebedev AN SSSR (Physics Institute imeni Lebedev of the AS USSR), and the Electrophysics Department of the Dnepropetrovskiy gosudarstvennyy universitet (Dnepropetrovsk State University).

SOV/58-59-5-10843

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 5, p 134 (USSR)

AUTHOR: El'tsin, I.A.

TITLE: Plate Method for Measuring the Dielectric Constant and Loss Angle of Dielectrics in the Meter, Decimeter and Centimeter Wavelength Ranges

PERIODICAL: V sb.: Fiz. dielektrikov, Moscow, AS USSR, 1958, pp 168 - 174

ABSTRACT: The author describes a method for measuring the dielectric constant and loss angle of dielectrics, which is suitable for any transmitting line, e.g. a waveguide, coaxial, or open twin-wire line. In this method a thin sample in the form of a plate is placed in the antinode of the field, and, a resonance curve having been plotted, the shortening of the line upon tuning it, as well as the widening of the resonance curve, are then measured. These data, together with the thickness of the sample, permit the determination of ε and $\mathrm{tg}\,\delta$ of the dielectric with the aid of very simple calculation formulae.

I.A. El'tsin

Card 1/1

SHASKOL'SKAYA, Marianna Petrovna; EL'TSIN, Iosif Abramovich; KHAYKIN, S.E., prof., red.; ZHABOTINSKIY, Ye.Ye., red.; KRYUCHKOVA, V.N., tekhn.red.

[Collection of selected problems in physics] Sbornik izbrannykh zadach po fizike. Pod red. S.E.Khaikina. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1959. 207 p. (MIRA 12:11)
(Physics--Problems, exercises, etc.)

STRELKOV, Sergey Pavlovich; EL'TSIN, Iosif Abramovich; YAKOVLEV, Ivan Alekseyevich; KHAYKIN, S.E., prof., red.; LIVSHITS, B.L., red.

[Problems in a general physics course] Sbornik zadach po obshchemu kursu fiziki. Moskva, Nauka. Pt.1. [Mechanics, electricity and magnetism] Mekhanika, elektrichestvo i magnetizm. Izd.3. Pod red. S.E.Khaikina. 1964. 312 p. (MIRA 17:9)

EL'TSINA, N.V.; VERESOTSKAYA, N.A.

Mechanism of the action of deoxyglucose on tumor cells. Biokhimiia 27 no.3:452-457 My-Je '62. (MIRA 15:8)

1. Institute of Experimental and Clinical Oncology, Academy of Medical Sciences of the U.S.S.R., Moscow.
(GLUCOSE) (CANCER RESEARCH)

EL'TSUFIN, M.A.

14(8) PHASE I BOOK EXPLOITATION SOV/2314

Pilitsyn, Aleksey Pavlovich, and Moisey Abramovich El'tsufin

Gazoturbinnaya ustanovka GT 700-4 s nagnetatelem 280-11-2; konstruktsiya, montazh i naladka (GT 700-4 Gas Turbine Unit With 280-11-2 Centrifugal Compressor; Design, Assembly and Adjustment) Moscow, Gostoptekhizdat, 1959. 183 p. 3,500 copies printed.

Sponsoring Agency: Glavnoye upravleniye gazovoy promyshlennosti pri Sovete Ministrov SSSR.

Exec. Ed.: K. P. Svyatitskaya; Tech. Ed.: E. A. Mukhina.

PURPOSE: This book is intended for specialists dealing with the installation and operation of gas turbine units.

COVERAGE: The author describes the design, erection and adjustment of the GT 700-4 gas turbine unit and the 280-11-2 centrifugal compressor used as gas boosters at compressor stations of modern gas-supply systems. The subjects discussed include the procedure and methods for checking foundations, parts and subassemblies of the turbine and compressor units, planning of erection operations, erecting

Card 1/6

equipment, and methods of regulation and adjustment. Equipment and methods for aligning and dynamic balancing of turbine and compressor rotors and the repair of reduction gears and of bearings are described. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

GT 700-4 Gas (Cont.) SOV/2314

AVAILABLE: Library of Congress

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PHASE I BOOK EXPLOITATION SOV/5551

El'tsufin, Mikhail Abramovich, and Aleksey Pavlovich Pilitsyn

Montazh, naladka i remont turbokompressornykh i turbogeneratornykh ustanovok (Installation, Setup, and Repair of Turbocompressor and Turbogenerator Units) Moscow, Mashgiz, 1960. 407 p. Errata slip inserted. 8,000 copies printed.

Reviewer: I. M. Stepanov, Engineer; Ed.: B. V. Shostakovich, Candidate of Technical Sciences; Ed. of Publishing House: V. P. Vasil'yeva; Tech. Ed.: L. V. Shchetinina; Managing Ed. for Literature on the Design and Operation of Machines (Leningrad Department, Mashgiz): F. I. Fetisov, Engineer.

PURPOSE: This book is intended for technical personnel concerned with installing, setting-up, repairing, and operating turbocompressor and turbo-generator units. It may also be of use to installation workers.

COVERAGE: The book describes the process of installing the most complex units of the Nevskiy mashinostroitel'nyy zavod im. Lenina (Nevskiy Machine Plant imeni Lenin), viz., the AKV-18-1 steam turbine with a K-4250-41-1 compressor, and the GT-700-4 gas-turbine unit with a 280-11 blower. The regulation and

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testing of turbines, compressors, and blowers are discussed, and attention is given to a consideration of the repair operations which must frequently be carried out during the inspection and setting-up of the units. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

15. Approximate weight of basic subassemblies of the AKV-18-1 turbine, the K-4250-41-1 compressor, and the GT-700-4 gas-turbine unit (in kg) 406

AVAILABLE: Library of Congress (TJ735.E4)

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VK/wrc/mas
10-6-61

EL'TSUFIN, S. A.

"Mastering Precision Casting of Turbine Blades," p. 196. in book Mechanization and Automatic Control of Founding Processes, Leningrad, 1957, 224pp.

S/114/60/000/003/005/008
E194/E355

AUTHORS: Libman, S.Ye., Pachin, V.Kh., Sternin, M.G. and El'tsufin, S.A., Engineers

TITLE: Casting of Nozzle Segments of Steam Turbine Type ВПТ-50 (VPT-50) by the Lost-wax Method

PERIODICAL: Energomashinostroyeniye, 1960, No. 3, pp. 35 - 37

TEXT: The nozzles of the high-pressure cylinder of turbine VPT-50 operate on steam at a pressure of 90 atm. and a temperature of 535 °C. The nozzle boxes consist of four separate segments wherein milled blades were mounted on machined rims and welded. The parts were made of forgings of steel grade 15Х11МФ (15Kh11MF). After welding, the duct sizes were corrected by hand fitting. To economise in cost, labour and metal the Leningrad Metal Works introduced the lost-wax method of casting nozzle-box sections. The cast segments have the ends cut off and are then butt-welded together. The patterns for the blade holders are made of a mixture of 96% technical urea and 4% boric acid. Those for

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Casting of Nozzle Segments of Steam Turbine Type VPT-50 by the Lost-wax Method

the blades are made in a presstool with a mixture of 50% paraffin wax and 50% stearine. When the pattern has been assembled in the mould the urea part can be dissolved out with water.
The wax surface is treated with a ceramic paint consisting of 33% by weight hydrolised ethylsilicate and 67% marshalite, which is natural quartz dust. Six layers of ceramic paint are applied to the pattern. It is then dried, first in air and then in an ammonia chamber. Next, the wax pattern is melted out of the mould in hot water at 80 - 90 °C. The mould is then dried at 200 °C in an electric furnace. The mould is reinforced with sand and hardened by heating in an electric furnace for six hours.
The nozzle segments are cast of steel grade 15Х11МФЛ (15Kh11MFL) which is of sorbitic structure. After preliminary cleaning up the castings are heat-treated by a process which

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S/114/60/000/003/005/008
E194/E355

Casting of Nozzle Segments of Steam Turbine Type VPT-50 by the Lost-wax Method

is described. Castings obviously defective are rejected by visual examination; final examination is by X-ray inspection and etching. Development experience that led to the use of the formulations and procedures given is briefly described. The shrinkage allowance is stated, and the method of controlled cooling used to avoid cracks is described.
By using casting instead of welding and milling, the weight of the normal segments on a turbine was reduced from 710 to 172 kg, the labour required was reduced from 1 730 to 840 man hours and the cost from 25 827 roubles to 13 387 roubles. There are 5 figures.

Card 3/3

EL'TSUFIN, Sender Abramovich; LIPNITSKII, A.M., red.; OBOLENTSEV, F.D., kand. tekhn.nauk, red.; LEYKINA, T.L., red.izd-va; BARDINA, A.A., tekhn.red.

[High precision casting] Lit'e povyshennoi tochnosti. Pod obshchei red. A.M.Lipnitskogo. Moskva, Mashgiz, 1961. 92 p. (Bibliotechka liteishchika, no.6) (MIRA 15:5)
(Precision casting)

ELITSUFIN, S.A.

14

PHASE I BOOK EXPLOITATION SOV/5648

Sokolov, Aleksey Nikolayevich, ed.

Mekhanizatsiya i peredovaya tekhnologiya liteynogo proizvodstva (Mechanization and Advanced Processing in Foundries) [Leningrad] Lenizdat, 1961. 236 p. 2,000 copies printed.

Ed.: Ye. V. Yemel'yanova; Tech. Ed.: I. M. Tikhonova.

PURPOSE: This collection of articles is intended for technical personnel, foremen, and skilled workmen of foundries. It may also be of use to staff members engaged in the mechanization of production operations.

COVERAGE: The collection contains articles discussing the experience of a number of Leningrad plants and engineering and design organizations in mechanizing foundry processes and in applying advanced techniques to the manufacture of castings. No personalities are mentioned. Some

Card 1/5

Mechanization and Advanced (Cont.) SOV/5648

articles are accompanied by references. References are all Soviet.

TABLE OF CONTENTS:

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Mechanization and Advanced (Cont.)

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Mechanization and Advanced (Cont.) SOV/5648

Kononov, M. N. Patterns With an Epoxy-Resin Base 229

AVAILABLE: Library of Congress (TS233. S55)

Card 5/5

VK/wrc/bc
11-15-61

COUNTRY : Hungary H-16
CATEGORY :

ABS. JOUR. : RZKhim., No. 1959, No. 87547

AUTHOR : Eltz, R.
INST. :
TITLE : Remazol Dyes and Their Use

ORIG. PUB. : Magyar textiltechn., 1959, 11, No 1, 1-4

ABSTRACT : Chemical structure, properties, dyeing methods, and fastness characteristics of Remazol dyes.
V. Ufimtsev.

CARD:

208

ELVIC, Vladimir (Maribor, Levstikova 15)

Surface hardening in the Maribor Automobile Factory. Pt. 1. Stroj vest 8 no.4/5:142-144 0 '62.

ELVIC, Vladimir (Maribor, Levstikova 15)

Surface hardening in the Maribor Automobile Factory. Stroj vest 8 no.6:177-178 D '62.

RAINS, A.; REIZIN, V.; EL'VIKH, P.[Elvihs, P.,deceased]; LUBEI, L., red.

[The Latvian Rezekne regiment in the air...; Latvian pilots in the Great Patriotic War] V vozdukhe Latyshskii Rezhitski...; latyshskie letchiki v Velikoi Otechestvennoi voine. Riga, Izd-vo "Liesma," 1965. 267 p. (MIRA 18:6)

ELVING, P. J.

CZECHOSLOVAKIA

WARNER, Ch.R., ELVING, P.J.

The University of Michigan, Ann Arbor, Michigan, U.S.A. - (for both).

Prague, Collection of Czechoslovak Chemical Communications, No 12, December 1965, pp 4210-4218

"Polarographic reduction of adenine 1-n-oxide."
(For the 75th birthday of Academician J.Heyrovsky).

ELWART, W.

EXCERPTA MEDICA Sec.9 Vol.12/4 Surgery April 1958

2358. THE CONTROL OF THE URINARY TRACT INFECTION IN PATIENTS WITH SPINAL CORD INJURIES - Zwalczanie żakażeń moczowych u chorych po złamaniach kręgosłupa z porażeniami - Elwart W. and Sakiel S. Z Wojewódzk. Szpit. Chir. Urazowej, Piekary Slaskie - CHIR. NARZAD. RUCHU 1957, 22/3 (353-357) Graphs 1 Tables 1

Best results have been obtained by tidal drainage and indwelling catheter applied from the beginning of paralysis up to the restoration of the automatic bladder function. The significance of careful asepsis is emphasized. General therapeutic measures, early mobilization and training in walking are as well of great importance. (IX, 8*)

Elwart, Waclaw

SAKIEL, Stanislaw; ELWART, Waclaw

Disability evaluation in cases of spinal injuries associated with cord lesions in the light of the new compensation bill. Chir. narz. ruchu 22 no.4:449-451 1957.

1. Z Oddzialu Urazowo-Ortopedycznego Szpitala Miejskiego Nr. 4 w Katowicach. Ordynator: dr St. Nowicki. Katowice, Szpital Miejski Nr. 4.

(SPINE, fractures
causing spinal cord inj., disability evaluation in Poland (Pol))
(SPINAL CORD, wds. & inj.
caused by fract. of spine, disability evaluation in Poland (Pol))
(DISABILITY EVALUATION
of spinal fract. with spinal cord inj. in Poland (Pol))

DAAB, Janusz; ELMART, Waclaw; NOWAK, Ryszard; WASIK, Jozef

Surgical treatment by means of osteotomy of the trochanteric region in neglected fractures of the femoral neck in old age. Chir.narz.ruchu ortop.polska 25 no.1:37-41 '60.

1. Ze Szpitala Chirurgii Urazowej w Piekarach Slaskich. Dyrektor i Kierownik Naukowy: dr. W. Sowinski
(FEMUR NECK fract.& dislloc.)

and delayed [illegible]
Polska 26 no.6:649-655 '61.

1. Z Wojewodzkiego Szpitala Chirurgii Urazowej w Piekarach Sl.
Dyrektor i Kierownik Naukowy: dr W. Sowinski.
(FRACTURES UNUNITED surg) (PSEUDARTHROSIS surg)

ELWERTOWSKI, Jan

Sluzba Informacyjna w Rybolowstwie Morskim(Information Service on Deep-Sea Fishing) by Jan Elwertowski. Warsaw: Wydawnictwo Komunikacyjne, 1956.

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728.3
.E4

ELBERTOWSKI, JAN

Sprat fisheries in the Gulf of Danzig. Pt.2. p.14.
GOSPODARKA RYBNA (Polskie Wydawnictwa Gospodarcze) Warszawa
Vol. 8, no. 2, Feb. 1956

So. East European Accessions List Vol. 5, No. 9 September 1956

ANDREASYAN, Ruben Napoleonovich, nauchnyy sotr.; EL'YANOV, Anatoliy Yakovlevich, nauchnyy sotr.; AVAKOV, R.M., otv. red.; ZAKHMATOVA, M.R., red. izd-va; FRENKEL', M.Yu., red. izd-va; BERESLAVSKAYA, L.Sh., tekhn. red.

[The Near East; oil and independence] Blizhnii Vostok; neft', i nezavisimost'. Moskva, Izd-vo vostochnoi lit-ry, 318 p. (MIRA 15:1)

1. Institut mirovoy ekonomiki i mezhdunarodnykh otnosheniy AN SSSR (for Andreasyan, El'yanov).
(Near East—Petroleum industry) (Near East—Politics)

GONIKBERG, M.G.; BL'YANOV, B.S.

Dimerization of butyraldehyde at superhigh pressures. Dokl. AN SSSR 118 no.1:92-95 Ja-F '58. (MIRA 11:3)

1. Institut organicheskoy khimii im. N.D.Zelinskogo Akademii nauk SSSR. Predstavleno akademikom B.A.Kazanskim.
(Butyraldehyde) (Polymerization) (High pressure research)

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5(3) 5.3200 S/020/60/130/03/017/065

AUTHORS: Conikberg, M. G., El'yanov, B. S. B011/B016

TITLE: Role of the Solvent in Menshutkin's Reactions

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 3, pp 545-548 (USSR)

ABSTRACT: The problem mentioned in the title is a partial problem of the reaction mechanism of nucleophilic substitution in the saturated carbon atom. In the present paper investigation results of one of Menshutkin's reactions are described, viz. the reaction of pyridine with ethyl iodide $C_5H_5N + C_2H_5J \longrightarrow C_5H_5NC_2H_5J$, dissolved in nitro-benzene and cyclohexanone at 50° and under a pressure of up to 2000 kg/cm². Figure 1 shows a device for determining the compressibility of the two solvents. To obtain the rate constant, the experimental results were plotted in a diagram in coordinates $\frac{1}{b-x} + B\tau$, where $B = \frac{b-a}{2}\left[\frac{1}{(b-x)^2} - \frac{1}{b^2}\right]$, a and b the initial concentrations of pyridine and ethyl iodide, x = the concentration of N-ethyl pyridinium iodide, and τ = time. Straight lines resulted in this connection (Fig 2).

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From their slope the rate constants of the bimolecular reaction at different pressures were calculated. The values of these constants are given in table 1. Table 2 contains the data for ΔV (change in volume on formation of 1 mole of the reaction product from the two components) and for the dissociation degree α of N-ethyl pyridinium iodide at 50°. The analysis of the experimental results based upon the assumptions of the authors led to the following conclusions: 1) The number of molecules which solvate the activated complex, is 1/11 up to 1/8 of the molecules in solvate sheaths of iodine- and N-ethyl pyridinium ions. 2) An undissociated molecule is far less solvated than the ions of the reaction product. This is due to a considerable decrease in volume on dissociation of the electrolytes. M. D. Pushkinskiy and N. K. Shvedov took part in this investigation. There are 3 figures, 2 tables, and 6 references, 3 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

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S/020/60/130/03/017/065
B011/B016

PRESENTED: September 28, 1959, by B. A. Kazanskiy, Academician

SUBMITTED: September 24, 1959

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80483
S/020/60/132/02/30/067
B011/B002

5.3830

AUTHORS: Gonikberg, M. G., Zhulin, V. M., El'yanov, B. S.

TITLE: On the Problem of the Connection Between the Crystallization of Aldehydes and the Development From Them of Polyoxymethylene-type Polymers

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 2, pp. 353-356

TEXT: It was the main purpose of this paper to find out whether the original crystallization of butyraldehyde is necessary for its polymerization under high pressure. Butyraldehyde first was purified by its transformation into parabutyraldehyde. The experiments were conducted in a multiplier with two windows (Fig. 1), which was provided for 8000 kg/cm^2 at normal temperature. A soldered up lead phial with butyraldehyde was introduced into the canal of the high-pressure block of the multiplier. The canal was filled with water - glycerin (1:1) and the required pressure was produced. The solid polymer was not soluble in acetone and alcohol, and little soluble in benzene, chloroform and CCl_4. The published data show that the solid polymer develops by a pressure increase from 4200 to 5200 kg/cm^2. The addition of benzoylperoxide accelerates this process. The authors doubt

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whether the polymerization of butyraldehyde is due to its crystallization followed by melting (as it is the case with acetaldehyde). Repeated freezing and melting under atmospheric pressure did not cause polymerization. The experiments in the multiplier with windows showed that butyraldehyde polymerizes under pressure without preceding crystallization. Experiments conducted by the authors on the action of various admixtures to polymerization and depolymerization of the solid polymers of butyraldehyde will be published separately. ~ 1.3% of water and 5% of propyl alcohol reduce the yield in solid polymers considerably. Hydroquinone (1.5%-3%) inhibits the reaction. Dinitrile of azo-isobutyric acid does not accelerate the polymerization noticeably. The polymers obtained at a pressure of 6300 kg/cm^2 were solid, plastic substances unstable under atmospheric pressure. Some weight% of quinone and hydroquinone added to the polymer bring about its stabilization. At room temperature, the polymer thus keeps several months if exposed to air. Equilibrium shift under the influence of pressure, is one of the main factors for the development of solid polymers of butyraldehydes under pressure. The authors conclude that a comparatively small increase in pressure may lead to a considerable equilibrium shift in the polymerization reaction. Further investigations by the authors are planned as to the problem why the

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polymerization sets in at a pressure similar to that required for the crystallization of the aldehyde at room temperature. There are 1 figure and 15 references, 1 of which is Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences, USSR)

PRESENTED: January 13, 1960, by B. A. Kazanskiy, Academician

SUBMITTED: January 12, 1960

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EL'YANOV, B.S.; GONIKBERG, M.G.

Relationship between the rate constants and equilibrium constants of the reactions taking place in solutions under pressure. Izv.AN SSSR.Otd.khim.nauk no.5:931-935 My '61. (MIRA 14:5)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Chemical reaction, Rate of)

GONIKBERG, M.G.; EL'YANOV, B.S.

Steric hindrance in Merchutkin's reactions. Dokl.AN SSSR 138 no.5:1103-1106 Je '61. (MIRA 14:6)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR. Predstavleno akademikom B.A.Kazanskim.
(Steric hindrance)

EL'YANOV, B.S.

Chemical reactions at high pressures. Vest. AN SSSR 32 no.5: 119-120 My '62. (MIRA 15:5)
(Chemical reactions)

EL'YANOV, B.S.; GONIKBERG, M.G.

Relation between the rate constants and equilibrium constants of reactions in solutions under pressure. Zhur. fiz. khim. 36 no.3:604-607 Mr '62. (MIRA 17:8)

1. Institut organicheskoy khimii imeni Zelinskogo AN SSSR.

EL'YANOV, B.S., GONIKBERG, M.G., ZHULIN, V.M.

Study of steric effects in chemical reactions by means of high pressure."

Report to be submitted for the 3rd Congress, European Federation of Chemical Engineering
London, England 20-29 Jun 62

L'YANOV, B.S.; RUDENKO, B.A.; GONIKBERG, M.G.; KUCHEROV, V.F.

Effect of pressure on the structural and steric orientation of diene synthesis. Report No.1: Condensation of 1-vinylcyclopentene with methyl acrylate. Izv. AN SSSR. Ser. khim. no.6:1082-1089 Je '64. (MIRA 17:11)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.

EL'YANOV, David Iosifovich; MOROZOVSKIY, N.G., kontr-admiral, red.; ZLOMANOV, V.A., podpolkovnik, red.; SAVIN, B.V., red.-leksikograf; KUZ'MIN, I.F., tekhn.red.

[Anglo-Russian and Russo-English dictionary of naval commands] Anglo-russkii i russko-angliiskii slovar' voenno-morskikh komand. Pod red. N.G.Morozovskogo. Moskva, Voen.izd-vo M-va obor.SSSR, 1960. 190 p. (MIRA 13:5)
(English language--Dictionaries--Russian)
(Russian language--Dictionaries--English)
(Naval art and science--Dictionaries)

S/121/63/000/001/002/014
A004/A126

AUTHOR: El'yanov, V.D.

TITLE: Feed collet chucks with sintered carbide bits for bar-material automatic lathes

PERIODICAL: Stanki i instrument, no. 1, 1963, 8 - 11

TEXT: The Cutting Laboratory of the Moskovskiy zavod malolitrazhnykh avtomobiley (MZMA) (Moscow Plant of Small-Displacement Cars) has carried out investigations to study the operating efficiency of feed collet chucks for bar-material automatics and developed appropriate design material for the manufacture of such collet chucks. The main tests were performed on single-spindle automatics in turning bar material up to 15 mm in diameter. As a result of these tests it was found that breakage of the collet chucks in service is relatively seldom and, if breakage occurs, this is mostly due to the increased hardness (exceeding RC 50) of the spring portion and owing to shocks during the setting of untrimmed bars. The author gives a detailed description of the collet-chuck design, analyzes the effect of this design on its operating efficiency and pre-

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sents a number of calculation examples for rating the spring portion of the collet chuck, clamping force and the chuk tabs. In a table he shows the various forms of soldering the sintered carbide bits and comments on the particular design features of collet chucks with sintered carbide bits. There are 7 figures and 3 tables.

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EL'YANOV, V.D.

Feed draw-in chucks with hard-alloy tips for automatic bar lathes. S'an.i instr. 34 no.1:8-11 Ja '63. (MIRA 16:2)
(Chucks)

EL'YANOV, V.G., inzh.

Developing production techniques in casting shops. Bezop. truda v prom. 2 no.7:20-22 Jl '58. (MIRA 11:9)

1. Khar'kovskiy traktornyy zavod im. Ordzhonikidze. (Founding)

SEMERYUK, V.I., inzh.; KL'YANOVA, L.I., inzh.; PRITYKINA, S.Z., inzh.

New degreasing compound. Mashinostroenie no.1:56 Ja-F '63.
(MIRA 16:7)

1. Dnepropetrovskiy zavod shakhtnoy avtomatiki.
(Cleaning compounds)

EL'YANOV, M.D.

ANIKEYEV, N.P., glavnyy red.; BISKE, S.F., red.; BOBYLEVSKIY, V.I., red.: VAS'KOVSKIY, A.P., red.; VERESHCHAGIN, V.N., red.; DRABKIN, I.Ye., red.; YEVANGULOV, B.B., red.; YEFIMOVA, A.F., red.; ZIMKIN, A.V., red.; LARIN, N.I., red.; LIKHAREV, B.K., red.; MENDER, V.V., red.; MIKHAYLOV, A.F., red.; NIKOLAYEV, A.A., red.; POPOV, G.G., red.; POPOV, Yu.N., red.; SAKS, V.N., red.; SEMEYKIN, A.I., red.; SIMAKOV, A.S., red.; TITOV, V.A., red.; SHILO, N.A., red.; EL'YANOV, M.D., red.; YAKUSHEV, I.R., red.: V redaktirovanii prinimali uchastiye: ANDREYEVA, O.N., red.; BAYKOVSKAYA, T.N., red.; BOLKHOVITINA, N.A., red.; BORSUK, M.O., red.; VASIL'YEV, I.V., red.; VASILEVSKAYA, N.D., red.; VOYEVODOVA, Ye.M., red.; YEVSEYEV, K.P., red.; KIPARISOVA, L.D., red.; KRASNYY, L.I., red.; KRISHTOFOVICH, L.V., red.; KULIKOV, M.V., red.; LIBROVICH, L.S., red.; MARKOV, F.G., red.; MODZALEVSKAYA, Ye.A., red.; NIKIFOROVA, O.I., red.; OBUT, A.M., red.; PCHELINTSEVA, G.T., red.; RZHONSNITSKAYA, M.A., red.; SEDOVA, M.A., red.; STEPANOV, D.L., red.; TIMOFEYEV, B.V., red.; KHUDOLEY, K.M., red.; CHEMEKOV, Yu.F., red.; CHERNYSHEVA, N.Ye., red.. DERZHAVINA, N.G., red.izd-va; GUROVA, O.A., tekhn.red.

(Continued on next card)

AÑIKEYEV, N.P.---(continued) Card 2.

[Decisions of the Interdepartmental Conference on the Unified Stratigraphic Columns of the Northeastern Part of the U.S.S.R.] Reshenila Mezhvedomstvennogo soveshchaniia po razrabotke unifitsirovannykh stratigraficheskikh skhem dlia Severo-Vostoka SSSR. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po geol. i okhrane nedr, 1959. 65 p. (MIRA 13:2)

1. Mezhvedomstvennoye soveshchaniye po razrabotke unifitsirovannykh stratigraficheskikh skhem dlya Severo-Vostoka SSSR, Magadan, 1957. (Soviet Far East--Geology, Stratigraphic)

EL'YANOV, M.D. Prinimala uchastiye MIKHAYLOVA, F.A.

[Stratigraphic dictionary of the Northeastern U.S.S.R.] Stratigraficheskii slovar' Severo-Vostoka SSSR. Magadan, Magadanskoe knizhnoe izd-vo, 1959. 166 p. (MIRA 16:3)
(Geology, Stratigraphic—Dictionaries)

LITVINENKO, A.U., kand. geol.-miner. nauk, otv. red.; KNYAZEV, G.I., kand. geol.-miner. nauk, red.; KRAVCHENKO, V.M., inzh.-geol., red.; KULINENKO, O.R., inzh.-geolog, red.; KHRIPKOV, A.V., kand. geol.-miner. nauk, red.; EL'YANOV, M.D., kand. geol.-miner. nauk, red.; KOROLEVA, T.I., ved. red.

[Problems of the geology and mineralogy of ore deposits] Voprosy geologii i mineralogii rudnykh mestorozhdenii. Moskva, Nedra, 1964. 188 p. (MIRA 17:12)

1. Institut mineral'nykh resursov.

EL'YANOV, M.D.; DANILENKO, Yu.N.

History of the sedimentation in the middle Dnieper Valley. Lit. i pol. iskop. no.4:113-116 Jl-Ag '64. (MIRA 17:11)

ODINTSOVA, M.M.; LAVRENOV, P.F.; FL'YANOV, M.D.

Reviews and discussions. Geol. i geofiz. no.8:138-149 '65.
(MIRA 18:9)

SEMERYUK, V.I.; EL'YANOVA, L.I.; PRITYKINA, S.Z.

Chemical preparation of aluminum and its alloys for electroplating. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekh.inform. no.9:32-33 '63. (MIRA 16:10)

SEMERYUK, V.I.; EL'YANOVA, L.I.; PRITYKINA, S.Z.

New composition for chemical degreasing. Biul.tekh.-ekon.inform. Gos.nauch.-issl.inst.nauch. i tekh.inform. 16 no.10:14-16 '63. (MIRA 16:11)

EL'YASBERG, M. YE., Engineer

Chief Designer, Leningrad Plant imeni Sverdlov (-1945-)

"Friction Effect under a Highly Rigid Flexible Load," Stanki I Instrument, 16, Nos. 1-2, 1945

BR-52059019

B-ELYASBERG, M.YE.

Metals Secondary
Working -5

98*. An Analysis of Feed Mechanisms in Machine Tools Regarding Uniformity of Advance and Sensitivity of Adjustment. M. E. Elyasberg. *Engineers' Digest*, v. 13, Sept. 1952, p. 298-300; Oct. 1952, p. 338-340. (Translated and condensed from *Stanki i Instrument*, Nov. 1951, p. 1-7; Dec. 1951, p. 6-9.)

From experimental data presented and theory derived it follows that, in presence of friction between lubricated surfaces at small velocities, transient phenomena are observed which cause friction force to differ from that in fully established motion. Theory discussed leads to a method of calculation applicable at design stage of machine tools. Graphs and diagrams.

AUTHOR: ~~El'yasberg, M.Ye.~~ (Leningrad) SOV/24-58-9-6/31

TITLE: On the Stability of the Process of Cutting Metals (Ob ustoychivosti protsessa rezaniya metallov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 9, pp 37 - 52 (USSR)

ABSTRACT: One of the basic conditions which have to be satisfied by the system machine tool/cutting tool/machined object is ensuring stability of the process of chip removal within a wide range of technological regimes. In spite of the rapid development of the general theory of self-generated oscillations and application of this theory, no satisfactory theory has been presented which is in accordance with experimentally determined facts on the self-generated oscillations during metal cutting. For evolving such a theory, it is obviously necessary to utilise the relations accompanying the deformation of the machined metal. The necessary constants relating to the conditions of the deformation of the metal during cutting were determined experimentally and the pressure of the chip on the surface of the cutting tool was averaged; on the basis of experimentally determined relations, this is permissible.

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Formulation of the Problem. In the case of a stable cutting process and absence of disturbances, the zone subjected to deformation is displaced relative to the object to be machined with the cutting speed v_s maintaining on the whole the stable picture of the distribution of the deformations. This picture is characterised by interrelated stress fields and speed fields. A disturbance which brings about a displacement of the cutting tool relative to the equilibrium condition should also bring about a change in the state of the deformed zone and an appropriate change of the magnitude of the forces which are applied to the cutting tool. It is shown in the paper that due to the specific nature of the cutting process, which relates to the plastic properties of the metal, this change cannot propagate instantaneously throughout the entire deformed zone and this brings about a delay in the change of the stress field and, consequently, a delay relative to the cutting tool co-ordinates of the forces acting on it. Such an assumption leads to the conclusion that self-generated

 oscillations during metal cutting are caused by the presence

of delay forces which generate vibrations in the system. The process of cutting will be stable if, during oscillations of the system, the energy which is introduced as a result of the delay is dissipated entirely. The conditions of stability of such a system can be determined by ordinary methods by analysing linearised equations which express its small oscillations. It was found that the high-frequency oscillations of the cutting force P (Figure 1) can be disregarded and that the direct cause of oscillations in the cutting force P is due to the fluctuations in the thickness of the chip. In the preliminary calculations, a system with lumped parameters is used with one elastic element each in the direction x and y whilst the other elements are assumed to be absolutely rigid. There are no inertia links between the circuits x and y . For such a system equations are formulated, Eqs (3.1) and (3.2), which describe small oscillations of a system with two degrees of freedom. Figure 4 shows a schematic diagram for the dynamic system, for which the relations Eqs (3.1), (3.2), (3.4) and (3.5) apply. The obtained equations are

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linearised; for the derived linearised system of equations (Eq 4.24), the schematic diagram, Figure 5, applies. Following that, the author considers systems with many degrees of freedom and with a single degree of freedom and evolves a calculation method. The inequality (Eq 5.7) expresses the condition of stability relating the width of the chip with the critical magnitude of the cutting speed; it can be seen that at the stability boundary the relation between the width of the chip and the cutting speed and the simple case under consideration is a hyperbolic one. The natural frequency of the system will be considerably higher than the partial frequency ω_x and an increase in the width of the chip brings about an increase in the natural frequency. In accordance with the presented theory, the characteristic equation for system of high orders can be represented in the form of a quadratic equation with complex coefficients and from this equation it is possible to graph the region of stability. According to experimental results, the oscillations are damped suddenly and not gradually. In the last part of the paper the presented theory is verified by

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experiment and by numerical calculations carried out on a lathe specially designed for this purpose. In these experiments the steady-state oscillations were studied, the magnitudes of the critical cutting speeds were determined for various parameters of the system and the delay times for the forces P and Q were measured under steady-state machining regimes. It was assumed in these experiments that if the influence of non-linearity was to be avoided, it is necessary to measure the constants in absence of self-generated vibrations. At the end of the article, the author compares facts which are well known from experimental data on self-generated oscillations during machining, with results derived from the theory proposed in this paper, as follows: 1) in Table 1, p 52, the critical cutting speeds V_{s1} and V_{s2} are compared which were obtained by plotting the regions of stability with those obtained experimentally in cutting "Steel 45" in a system of the sixth order; 2) in a system for which, in the free state, the natural frequencies $\omega_x = \omega_y$, during self-generated machining oscillations,

Card5/7 beats will always be observed, which indicate the presence

of two natural frequencies, Figure 12. A graph, Figure 13, shows a solution of the system of equations of the type of Eq (4.25), p 46, carried out by means of an electronic integrator. The curves confirm the presence of various natural frequencies; 3) increase of the rigidity and of the partial frequency of the circuit x is a basic means of increasing the stability. The results (calculated as well as experimental) entered in the Table, p 52, are in accordance with this assumption; 4) an increase in the width of the chip b_c brings about a reduction of the stability; this assumption is confirmed by the table and by the structure of Eq (4.26); 5) a decrease in the thickness of the chip reduces the stability of the system; this fact is clearly explained by Eq (4.22). Thus the theory presented is in agreement with basic known facts on self-generated oscillations during machining. Tlusty (Ref 7) explains the occurrence of self-generated oscillations during cutting by two facts, namely, non-coincidence of the directions of the forces p and q with the directions of the main deformations which bring about a coupling of oscillating circuits and the presence of a

successive increase in the intensity of the oscillations during the repeat passage of the cutting tool through the disturbance section. According to the described theory, these factors are not fundamental but should be taken into consideration in the calculations. The following participated actively in the experiments: M.Ye. Berkholat, Ye.A. Kunin, A.N. Lipatov, L.I. Aulov and K.P. Dolgov; V.I. Krysanov, V.Ye. Mednik and Ye.G. Nizhnik carried out the calculations. There are 13 figures, 1 table and 7 Soviet references.

SUBMITTED: November 16, 1957

KL'YASBERG, M.Ye.

Analyzing the stability of metal-cutting processes. Stan.i instr. 30 no.3:3-7 Mr '59. (MIRA 12:3)
(Machine tools)

S/139/60/000/005/013/031
E073/E535

6.3100 (also 2201, 2801)

AUTHORS: Zuev, V. Ye., Elyashberg, M.Ye. and Safonova, G.A.

TITLE: Transparency of Thin Atmospheric Layers in the Range 1 to 13 microns

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, No.5, pp. 77-81

TEXT: In most work published until now two approximate laws of attenuation are applied, one is the exponential law, the other the square root law. It is of interest to make use of the available experimental material to choose analytical expressions which would approximate satisfactorily the attenuation law. Of particular interest are investigations for small values of w (depth of the water layer) of the order of 10^{-5}, 10^{-3} cm, since it is particularly for this range of values that the formation of the basic absorption bands is most intensive. Investigation of the spectral integral transparency of thin layers of the atmosphere is of interest due to the fact that in measuring the absolute transparency over large distances it is usually assumed, without adequate justification, that absorption of the radiation in the reference channel over a

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distance of a few metres can be disregarded. The aim of the work described in the paper was to elucidate the possibility of application of these laws to the attenuation of infrared radiation for w between 10^{-5} and 10^{-3} cm and also to obtain quantitative data on the spectral and integral transparency of thin atmospheric layers, up to 3 m in the range of 1 to 13 microns. All the investigations were carried out on an ИКС-6 (IKS-6) spectrometer with NaCl prisms, an amplifier and recording equipment. To eliminate water vapour and CO_2 from the path of the radiation beam between the source and the thermocouple, the light source and the cuvette of the spectrometer were evacuated, the monochromator and other parts of the path were blown through with dry nitrogen. Thus, water vapour and CO_2 were completely eliminated from the path of the beam and it was possible to record the total transparency curve or the spectral curve of radiation from the source for spacings between 5 and 300 cm. From the curve of the total transparency and the absorption curves for the various distances, it was possible to determine the transparency curve. Two series of measurements were made, in the first one

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absorption spectra of atmospheric water vapours and CO_2 were measured for spacings of 5, 20, 40, 60, 235, 255, 275 and 300 cm for a given absolute humidity. In the second series the absorption of the radiation was measured for a fixed spacing of 2.35 m for absolute humidities of 7.5, 10.12 and 14.5 millibars; the magnitude of the precipitated water varied between 10^{-5} and 2.5×10^{-3} cm. All the spectrum recordings were for the range 1 to 13 microns under laboratory and natural atmospheric conditions. No absorption was detected in the range 8 to 13 microns, which is fully in accordance with literary data (Ref.3). To verify the possibility of application of the exponential law and the square root law for expressing the attenuation of infrared radiation, graphs of $\ln T$ versus w and T versus $\sqrt{w}$ were plotted for all the peaks of the absorption bands 2.7 and 6.3 microns, which are due to water vapour ($T = 1-A$ is the transparency for the peak under consideration). It was found that in the range 10^{-3} to 2.5×10^{-3} cm the attenuation can be satisfactorily described by the exponential law as well as by the square root law. If w drops below 10^{-3} cm, the exponential law will no longer be fulfilled and the same applies to the square root law from a value of

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$w \simeq 5 \times 10^{-4}$ cm. Additional experimental data will be required for deriving an analytical expression which approximates satisfactorily the behaviour of attenuation for layers thinner than 10^{-4} cm. The spectral transparency curves were plotted for various quantities of precipitated water in the range of 1 to 8 microns. This range can basically be sub-divided into two spectral ranges of 1 to 4 microns and 4 to 8 microns. In the first range absorption is basically at 2.7 microns, in the second range there is a wide absorption band with a centre at 6.3 microns for water vapours and a band at 4.3 microns for CO_2. It can be seen from the curves that to disregard the absorption of radiation along a few metres and even along fractions of a metre is permissible only for well defined spectral ranges but not for the entire spectral range. Laboratory results are compared with results obtained under natural conditions. A new clearly pronounced water vapour absorption band was observed in the range 2.5 to 3.3 microns, which is due to some absorption agent in the free atmosphere. In spite of some differences in the spectra obtained under laboratory and under natural conditions, the

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integral absorption measured under laboratory conditions differed only slightly from those measured under natural conditions. There are 3 figures, 1 table and 3 references: 1 Soviet and 2 English.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V. V. Kuybysheva (Siberian Physics and Engineering Institute, Tomsk State University imeni V. V. Kuybyshev)

SUBMITTED: December 24, 1959

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